Eclipsys Corporation
Response to Questions for
the HIT Standards Committee – Implementation Workgroup
Hearing on Implementation Starter Kit: Lessons & Resources to Accelerate Adoption
March 8, 2010

2. Implementation Experience Panel (paired provider & vendor)

For the Vendor:
Your customer partner has identified solutions for meeting the requirements of meaningful use and quality reporting. In your role of supporting your customer, please expand on possible solutions and provide other solutions being used in your customer base.

Describe your roadmap for moving from where you are today to having software that supports the Level 1 "meaningful use" criteria which is able to be certified.

Eclipsys is closely watching the activities of the HIT Policy Committee and HIT Standards committee to monitor the evolution of Meaningful Use objectives and measures so that we can adjust our product roadmaps to provide solutions to help organizations address ***all*** levels/stages of meaningful use while preparing for a future of more open information exchange across care settings. We understand that the committees are only able to give recommendations with no certainty that any or all of their recommendation will be in final regulations. In the absence of a defined roadmap for meaningful use for Level/Stage 2 and Level/Stage 3, it is the only guidance we have at present for what the future might require in the way of new features and functions for an EHR.

ARRA-Certified Acute Care EMR Solution
Due to ship the end of March 2010, Sunrise Enterprise 5.5 is the combination of our products designed to help clients run their institutions more effectively and yield greater patient outcomes. Much of this release was specifically crafted to contain new design features and functions our clients will need in order to be able to meet the expected meaningful use objectives and measures.

Sunrise Enterprise 5.5 is the most significant uplift/release of Eclipsys' core clinical system in decades – in addition to an inherent pleasantness to the application, sophistication & elegance – it also is leagues ahead of the competition in handling care complexity and user customization while remaining true to evidence-based practices and addressing interoperability and health exchange needs. With this solution, we will be applying for ARRA modular certification, as well as comprehensive certification.

It also provides our new, open platform. Beginning with the release of Sunrise Enterprise 5.5, we are providing a technology foundation that will enable healthcare innovate beyond the feature/function paradigm. Eclipsys' clients have long had the differentiating ability in healthcare to build applications on the Eclipsys solutions platform, and since 2003, they have created approximately 2,000 medical logic modules and ObjectsPlus/XA applications that work with Eclipsys software. Now Eclipsys is offering software development kits to enable both clients and third parties to natively write applications on its platform. This move away from proprietary, closed systems (too common in healthcare) will support Eclipsys healthcare organization clients to embrace and extend current technology investments (versus replace); eliminate the need for costly interfaces to dramatically lower the cost of technology ownership; and remove the

technology innovation constraints caused by the waiting for a single vendor's development timeline.

Additionally, we will provide all the needed features in our 5.5 release for our clients to meet all of the measures and objectives, without regard to what they choose to defer to Stage 2 per the recently proposed 3-1-1-1-0 defer plan, which allows healthcare organizations to delay having to report on a variety of meaningful use requirements.

Analytics Tools for Monitoring and Reporting Performance
As part of Sunrise Enterprise, Sunrise Clinical Analytics provides critical information for monitoring performance and meeting regulatory requirements, including meaningful use, The Joint Commission core measures as well as other CMS, PQRI and NQF quality initiatives. Sunrise Clinical Analytics is a clinical business intelligence solution that enables healthcare organizations to monitor clinical performance, improve patient outcomes and reduce costs. Prebuilt or customized reports and dashboards provide powerful access to performance information across the hospital to enable improved quality, cost and efficiency.

Under the terms of our alliance agreement with Microsoft, we also plan to integrate key components of Sunrise Enterprise with Microsoft Amalga Unified Intelligence System (UIS), a data aggregation platform that integrates vast amounts of clinical, administrative and financial data from disparate information systems. The integration will serve to further enhance the analytic capabilities Eclipsys can provide to its clients, while making it easier for any healthcare organization to connect disparate data repositories, opening up a whole new paradigm of data analysis and clinical and financial uses.

Implementation Focused on ARRA Requirements
Eclipsys' implementation philosophy and Speed to Value methodology is driven by both our commitment to client satisfaction and to ensuring our clients are equipped with the solutions they need to achieve meaningful use.

Leveraging repeatable practices from hundreds of successful clients during build and process design, our Speed to Value implementation helps organizations meet their goals on-time and within budget. Our philosophy is simple: we structure an implementation that helps organizations derive maximum value in the shortest period of time — typically within 12 months.

Upon project completion, healthcare organizations are live on a system designed to deliver the following key benefits:

- Widespread clinician adoption
- Measurable outcome improvements
- Powerful analytics to track, manage and report on quality measures
- Provide technology needed to achieve ARRA meaningful use and objectives

We build our adoption expertise into an implementation. We start with a 60 percent preconfigured solution that includes a framework for CPOE adoption, and includes pharmacy, ED, advanced documentation and orders reconciliation functionality. Outcomes Toolkits and Quality Reports are also built-in. Then, we work with organizations to configure 40 percent of the system around specific workflows and preferences. This enables an organization to roll out a system that reflects industry standards and supports unique clinicians' practice patterns - promoting deep and rapid adoption.

In executing this roadmap, what do you feel is your greatest challenge and why?

Compressed Development Time for Newly Released Features

Our greatest challenge, besides the industry challenge of waiting for the requirements to be released, is the complex demand to accommodate a compressed timeline for developing new features. When the more than 100 quality reports were included in the NPRM, the question "Could you capture the data in the EHR?" became more specific: "Could you accommodate the very complex logic in the numerator and denominator to do the reporting?" As an example, including site of service code while determining percentage of orders entered created the need for vendors to incorporate site of service into individual orders, since orders by location alone will not meet the requirement.

Maturity of some of the quality reports is also a challenge. Many of the reporting criteria needed to accommodate the numerator and denominator come from the billing system, not the EHR. That presents additional new workflow challenges.

Database Changes
As we are sure ONC is aware, but it is worth mentioning, any additional lead time ONC can provide to give vendors adequate time to build and adequately test new features before a due date for meaningful use is invaluable.

As meaningful use evolves for Stages 2 and 3, one of the largest challenges will be to make database-schema modifications involving any very robust and complex product used in large integrated delivery networks (IDN). It is one thing to put a new feature in a document in a stand-alone ambulatory care system; it's entirely more complex to incorporate new features in products that are interfaced to ventilators, invasive monitoring devices, and laboratory and pharmacy systems. Building a feature in an EHR for a large IDN can affect much of their IDN "ecosystem." Adequate time is needed to not only build new features into the product, but also adequately test the new capabilities to ensure those changes have not negatively impacted the existing environment that the EHR resides in.

Standardized Vocabulary for Existing Clients
We also are addressing the need to help our clients map existing dictionaries in the product to the required standardized vocabulary. New clients have the advantage of getting a product "off the shelf" with standardized vocabulary. Clients that have used order entry since before personal computers and HL7 ever existed will require assistance in mapping vocabularies so they maintain the robust features built on their previous terminology.

Privacy and Security
Evolving changes in privacy and security will continue to be a challenge, and are in part heightened because only high-level features for the disclosure log are included in the NPRM. The industry needs to address many privacy and security related issues, including accommodating disclosure logs and stricter privacy, incorporating greater security and confidentiality features, and addressing patient choice to "do not disclose" on a self-pay visit, among other needs.

Specifically, clarifications on the appropriate *levels* of security present a significant challenge. (Are we locking down a visit? A document? Over 30,000 items in an order entry catalog or observation catalog to accommodate "cherry-picking" confidentiality scenario?) What level in the EHR the data needs to be confidential upon patient request? A request to isolate the disclosure of "item 3 in flowsheet XYZ" presents a much bigger challenge from a development standpoint than isolating from disclosure the entire visit or the entire flowsheet. We have a huge concern the way the statute is written if you keep confidential a self pay "visit' and anything from that "visit" and in that visit you find out there is hypertension, AIDS, or diabetes – does that mean for the life of the record that is never disclosed or accounted for on a problem list and is kept confidential for the life of the patient? The consequences of keeping that information out of every visit "forever" presents great medical challenges for those treating the patient.

Meaningful Use CPOE Adoption
One challenge we are not concerned about the ability for healthcare organizations to adopt CPOE. We have seen the comments on *regulations.gov* that organizations are concerned about being able to meet the first-year meaningful use requirement of 10-percent CPOE adoption. We're proud to say that within our client base we report a 74 to 76 percent adoption rate. Of all the orders written in the US, one in four of them is written in an Eclipsys product. This is achievable due to our superior workflows, including our ability to minimize "nuisance alerts;" our Speed to Value methodology; an open platform that includes ObjectsPlus – which enables organizations to quickly build custom applications that maintain a familiar Eclipsys interface; and a collaborative environment among Eclipsys and its clients. In fact, many of the real pioneers of this industry are the numerous Eclipsys clients that have been doing CPOE for over 40 years with our heritage solutions – and are still our clients today.

Meaningful Use of Clinical Decision Support
Another significant factor in CPOE adoption success is our robust clinical decision support rules engine. Using very complex logic before alerts fire, clients are able to test alerts before they go live to determine if they need to tighten the logic. Our clients are active in national clinical decision support communities, helping to develop the use of CDS in increasingly complex, meaningful ways beyond the basic drug-drug, drug-allergy alerts that fire with "yes-no only" logic that lead to many "nuisance alerts".

Eclipsys actively participates in developing the HL7 standard for decision support, Arden syntax. Using the power of Arden syntax, we have some rules in our product that have 11 full pages of "if-then" logic built into the rule before it fires. Having said that, the tremendous challenge of that much logic and "if-then" that goes into the design of a clinical decision support rule, with every new feature that is put in the product or change in attributes of an item, we need to ensure that it did not "break" any logic in any of the rules. Our clients also are faced with that challenge since many of them write their own medical logic modules (MLMs). This will be a particular challenge when the problem list is switched from being ICD-9 based, to being SNOMED based. All logic in all rules must be changed to reflect that change in standardized vocabulary.

Additionally some alerts execute specified actions, such as adding a patient to a watch list, or initiating the display of a comment in the patient banner. As an example of the significance of that feature – we were able to launch a toolkit within days of the H1N1 outbreak. This automated toolkit was designed to help hospitals limit the spread of the H1N1 influenza in waiting areas. The toolkit supported triage personnel in the rapid identification, isolation and treatment of patients who might have the H1N1 influenza. The solution prompted caregivers to assess patients for the presence of acute respiratory disease and accompanying risk factors. If positive conditions were indicated, laboratory orders for influenza screening (including H1N1 flu-specific orders) were triggered. The patient was then placed on a watch list, followed by the creation of patient education and preventive treatment instructions.

By combining customized documentation templates, orders, clinical alerts and analytics, the tool was designed to accelerate the identification and isolation process from anywhere from five to 72 hours sooner, as compared to current clinical workflows. The free toolkit was available to all Eclipsys clients via Web download for use in the Sunrise product line.

CPOE and Decision Support Major Elements of Improving Quality Outcomes
Baylor Health Care System is to be commended for being awarded the 2008 NQF National Quality Healthcare Award for its proactive and exemplary response to the national call for quality improvement and accountability by successfully using performance measurement to drive improvements in quality and efficiency and fostering a culture of transparency and accountability to patients and the community. Baylor efforts to use technology to improve care and incorporate the EHR into its long-term strategic vision sets it apart; the organization will surely continue to reap positive benefits as it continues along this path.

In 2010, North Shore-Long Island Jewish Health System also received this award. The fact that two Eclipsys clinical clients have received this award in the past four years is a strong testament for the use of our clinical technology to help organizations achieve meaningful, sustainable quality improvement in healthcare.

Outline the tools that you are providing to your customers to facilitate their ability to demonstrate the Level 1 "meaningful use" criteria and receive the CMS incentive payments.

As mentioned, the cornerstone of our ability to provide clients the technology to demonstrate meaningful use and achieve the measures and objectives Eclipsys' is continuing to monitor changes and adjusting product roadmaps to accommodate meaningful use objectives and measures. Our enterprise EMR solution, Sunrise Enterprise 5.5, handles care complexity and user customization while remaining true to evidence-based practices and providing a robust clinical decision support rules engine. It's worth noting that our advanced CPOE solution includes the ability to do complex chemotherapy orders. Also as part of that solution, clinical analytics tools provide critical information for monitoring performance and meeting regulatory requirements, including meaningful use, The Joint Commission core measures and other CMS, NQF and PQRI quality initiatives.

Again, our Speed to Value methodology helps clients to achieve their strategic goals for clinical technology initiatives in a shorter time frame. We start with a 60 percent preconfigured solution that includes a framework for CPOE adoption, and includes pharmacy, ED, advanced documentation and orders reconciliation functionality. Outcomes Toolkits and Quality Reports are also built-in. Then, we work with our clients to configure 40 percent of the system around specific workflows and preferences. This enables an organization to roll out a system that reflects industry standards and supports unique clinicians' practice patterns – promoting deep and rapid adoption.

We're also unlike some of our competitor vendor companies. We design interoperability into every portion of our solution portfolio b/c we recognize that widespread IT adoption means supporting a realistic, heterogeneous environment. We offer an open technology platform that supports interoperability. Other companies in our industry strong arm providers to automate every community endpoint with their solutions.

3. Innovation Panel

Describe your organization's innovative approach to achieving or assisting others in achieving the goals of Meaningful Use.

Eclipsys provides pioneering solutions that encompass the evolving needs of healthcare organizations today. Our strength lies in our strategic ability to deliver technology innovations that assist our clients in their efforts to transform care delivery and deliver superior outcomes. We're proud to lead the industry in physician adoption and CPOE – two key elements of ARRA.

Today, that means helping launch their efforts to achieve meaningful use while preparing for a more open approach to healthcare information technology for the future. An open platform is key. Our platform offers a pragmatic, economical approach to healthcare providers as they seek to rapidly implement the proposed technology requirements for ARRA meaningful use.

As mentioned, our leading solutions, Speed to Value methodology and outcomes focus set us apart. So does our open platform approach. As part of our open platform approach, our ObjectsPlus capabilities empower clients to customize their solutions, enabling them to build objects and interact with the EHR database without interfering with the source code of the

solution. Product upgrades are able to be completed without interfering with those custom-built objects, allowing innovation to be further enhanced at the individual client site.

Are there requirements or standards that help or hinder innovation or adoption?

One concern over standards and requirements is the short timeframe to get the features into the product and allow time to adequately test the product before general availability. If a vendor must push features into an EHR quickly, time to coordinate into a reasonable workflow is compressed. This will surely affect adoption.

A set of standards that is concerning pinpoints the degree of security at the data level. Clarification is needed to ensure we address security at the appropriate levels. (Will security truly be required for any feature of any item in any dictionary, at the document level, or the visit level? Will a password be required for "print screen" to give a consumer a copy of their trended lab, or will you just need a password if you export protected health information?) Requiring a password "at every mouse click" simply to accommodate an audit log requirement will hinder adoption. As Dr. John Halamka stated in an earlier HIT Standards Committee meeting, "Let's not build a library that is so secure no one can check out a book." If an EHR is locked down so tightly with security features, no one will adopt it.

Outline the tools, techniques or approaches that you think are key to fostering innovation.

Based on the goals of the national strategic framework and the Health Outcome Policy priorities, Eclipsys sees seven trends emerging that characterize the future of healthcare:

- Toward outcomes and accountability versus marketing
- Toward health versus healthcare
- Toward community versus geography
- Toward best practices and standards of care versus isolationism
- Toward person-continuity of care and health versus patient-episodic medicine
- Toward accountability and transparency versus reputation or "exclusivity"
- Toward IT-enabled care and records versus paper

These trends reflect evolving capabilities that are imperative as technology and the society have evolved. These trends describe the shared goals of Eclipsys and our client partners as we aggressively progress into the 21st century.

Toward Outcomes and Accountability versus Marketing

The future of healthcare will reflect solidification toward continued and increased accountability. Marketing campaigns and brochures without statistically significant outcomes as proof of impact will not suffice. Americans and their governments will continue to demand more tangible, data-driven proof of comparative excellence. Comparison will be versus each organization and providers' own past proving improvement, and versus other organizations and providers within the industry proving excellence. As the industry matures, "outcomes" will become the generic term for denoting the results achieved through and from the healthcare system, from immediate results, to restoration of function and health, to improved or preserved wellness over time and populations.

The demand for tangible, proven outcomes will result in standardization of how outcomes are described classified, computed and reported. Outcomes will include not only those required for government reimbursement or incentives, such as CMS or ARRA, but also those yet to be introduced, and those that "make sense" in describing local mission or market differentiators.

Outcomes will come to be described and classified into at least these five or similar categories:

- ***Clinical and patient safety***, including all those health-related outcomes for which the industry is intended and designed.

- ***Financial***, including those describing how organizations and providers remain sufficiently "profitable" to maintain their healthcare-related missions. Financial metrics will also reflect the return on investment for IT acquisitions and implementations.
- ***Efficiency***, including metrics and improvement describing how quickly or cost-effectively processes, providers, or subsystems within the milieu provide services for those they serve
- ***Satisfaction***, meaning those outcomes metrics describing how patients and their families perceive the systems, providers and services with which they have interacted, as well as those describing the satisfaction of the providers and employees and contributors to the care-related and service processes.
- ***IT adoption***, an area that includes all metrics reflecting the effectiveness of the IT implemented becoming a normal and routine part of the activities of care and service provision: "the way we do what we do." These metrics will eventually expand to reflect adoption at the patient/person level, as solutions intended for their use must be adopted in order to be effective. Without adoption, IT investment cannot produce a return.

EMR/EHR competitors that cannot prove a history of outcomes successes and improvements for their clients and implementations, representing the full range of outcomes type, will fail in the marketplace.

EMR/EHR competitors that cannot prove the capacity to capture, monitor, and report the full range of outcomes success will fail in the marketplace.

Toward Health versus Healthcare

The industry will experience the long-intended shift toward Health as the focus, rather than the traditional healthcare focus on "episodes and encounters." However desirable that was in the past, the shift was not achievable until the appropriate IT foundation was in place. IT makes the transparent and effortless sharing of information achievable that allows for clinical decision support (CDS) across venues and geographies. In the absence of cross-locale CDS, care-givers and professionals simply cannot monitor all of the elements of personal history and events necessary to sense and act on health-related information. And CDS cannot be achieved without CPOE. And neither can be achieved without organization-wide and provider-general adoption.

EMR/EHR competitors that cannot show proven CPOE adoption with fully-capable CDS will fail in the marketplace.

Toward Community versus Geography

The industry will evolve past its current limitations on "geographically defined care" by location and venue. Community will become the basis of care, health and data. As with the focus on health over care, the shift to community-focused health and medicine was not achievable until the appropriate IT foundation was in place. IT allows for sharing of information across venues and geographies. IT also enables CPOE and CDS across locations and venues, thus allowing caregivers to contribute nearly interactively in virtual space, and act on CDS-enabled decision capabilities regardless of where the care giver or the patient may be.

However, in the absence of cross-locale CPOE and CDS, care-givers and professionals simply cannot monitor all of the elements of personal history and events necessary to sense and act on health-related information. And CDS cannot be achieved without CPOE. And neither can be achieved without organization-wide and provider-general adoption.

Again, EMR/EHR competitors that cannot show proven CPOE adoption with fully-capable CDS will fail in the marketplace.

And EMR/EHR competitors that cannot show proven outcomes involving care and interactions across venues and locations will fail in the marketplace

Toward Best Practices and Standards of Care versus Isolationism

Historic reliance on individual, isolated care professionals and hospitals for achieving optimal outcomes will continue to diminish toward vanishing. Optimal care and related processes will continue to be documented through evidence and data, and be widely and locally adopted through ideal technology.

The same applies to patients and their life styles and behaviors. As best practices for their care and health maintenance are described and documented, and operationalized through technology for uniform delivery, patients will increasingly be held accountable for adherence. IT will become the basis for improved monitoring of compliance to therapy, and perhaps compliance to life style. Americans will not immediately adopt such possible "invasive" capabilities. However, society will increasingly rely on technology to understand how to reduce the cost of health and healthcare, and increase accessibility, thus requiring improved use of limited resources and improved behaviors by clinicians and patients, people.

CPOE with CDS through order sets are the key factors in enabling adoption of best practices. Outcomes data are the key factors for proving and improving current best practices, and for providing evidence of better practices for subsequent adoption.

EMR/EHR competitors that cannot enable their clients to readily adopt best practices through CPOE, CDS and order sets will fail in the marketplace.

EMR/EHR competitors that cannot enable their clients to show proven outcomes supporting the best practices, and for achieving improvements continuously thereafter, will fail in the marketplace.

Toward Person-Continuity of Care and Health versus Patient-Episodic Medicine

The industry will evolve further toward person-centric capabilities, beyond the episode or encounter within any location or venue or caregiver. However, this capability will not be achieved until the list already discussed is achieved. Person-centric care is the aggregate culmination of EMR/EHR capabilities that are not location-limited, provider-bound or encounter-dependent. It also relies on the ability to provide best practice for each patient or person through CDS that considers data from every location and across time for each patient.

Again, EMR/EHR competitors that cannot show proven CPOE adoption with fully-capable CDS across locations and venues cannot provide genuinely person-centric care and will fail in the marketplace.

Toward Accountability and Transparency versus Reputation or "Exclusivity"

The industry has tolerated comparative ratings of hospitals, care-provider organizations and providers themselves based on reputation and an absence of data. The future will see increases in data-driven contrasts with several important results:

- Organizations will become more focused on data-driven improvements to ensure comparative excellence.
- Patients will become more educated and make more decisions based on comparative data.
- Payments will become more linked to performance-related data, even beyond the current CMS and ARRA metrics.
- Publicly accepted rating systems will increasingly rely on comparative data for their comparative rankings.

CMS and ARRA data, along with other standardized and standardizable data sources, will increase in number and influence.

EMR/EHR competitors that cannot show proven and competitively advantageous successes from among their customer base will fail in the marketplace.

Toward IT-enabled Care and Records versus Paper

The most obvious trend is away from reliance on paper and low-tech approaches to healthcare and to managing healthcare. Computerization and automation of care and the underlying infrastructure are not only critical and achievable, but are now incentivized and mandated. We fully endorse the Federal initiatives designed to catapult the industry into the 21st century.

However, computerizing paper is not sufficient for achieving the goals of healthcare. IT must be designed, implemented and thereafter continuously proven for achieving the following:

- ***Care-giver documentation***. The foundation of computer-assisted care processes, and financial success, is the capability for care professionals to correctly and completely document all that they assess, conclude and deliver for patients. This is the foundation for all subsequent value of IT-enabled healthcare, including clinical decisions support and financial viability.

  EMR/EHR competitors that cannot enable high-use, intuitive care-giver documentation capabilities, for physician, nurses and allied professionals, will fail in the marketplace.

- ***Computer-based Physician Order Entry***. Past reliance on paper and hand-writing will become fully obsolete into the future. Technology enables the complete, correct and fully legible orders every time, fully aligned with formularies and the ability to make best clinical and cost-effective decisions in real time.

  The value of an IT investment is achieved only through its use. In the case of CPOE through EMR/EHRs, systems that are not fully adopted and utilized will not be able to achieve the goals for which they were designed. When any order is not entered by computer, the processing associated with it – for timeliness, accuracy, and quality control – is compromised partially or completely. Every order will become computerized for a host of reasons, including quality, safety and financial, and low adoption histories for CPOEs will doom mediocre competitors in the EMR/EHR marketplace.

  EMR/EHR competitors without a proven history in CPOE adoption will fail in the marketplace.

- ***Order Sets Instead of Mere Alerts*****.** While alerts are fully empowered through general EMR/EHR technologies, the industry will learn and evolve rapidly toward order sets and order sentences – through order sets clinicians can avoid, obviate or mitigate the challenges associated with Alert fatigue, and can make the correct choices from the get-go. Alerts are a throw-back to the old days of "mass inspection of error" from which the entire Quality industry evolved in response (e.g. 6-sigma, TQM, CQI, Lean-manufacturing).

  Order sets enable standardization of care, long sought but barely achievable through the customary paper processes and soon-obsolete cover sheets. Additionally, order set ensure completeness and correctness of documentation for financial purposes and for quality reporting, such as the data collection and reporting requirements associated with CMS, ARRA, Joint Commission, and others.

  EMR/EHR competitors that rely on alerts alone will fail in the marketplace. EMR/EHR competitors without proven histories in order set use for enabling documentation mapped to charge codes, OR to quality reporting will fail in the marketplace.

- ***Results retrieval/reporting in near-real time*****.** The future will enable clinicians immediate access to results of test or procedures via computerization. That access will include alerts that arrive visually, auditorily and tactilely in order to ensure appropriately timely response and reaction.

EMR/EHR competitors that cannot enable near-immediate access to all results will fail in the marketplace.

- ***Remote access.*** Clinicians will have access to IT-enabled systems for all the purposes listed above from virtually any physical location at virtually any time. Ubiquity will become commonplace. A host of improved devices for enabling universal access will continue to evolve, while those already available will increase in acquisition and implementation. CPOE, order sets, results retrieval will all become more enabled and more widely used as remote access becomes available, and as practitioners become increasingly comfortable with and acclimated to its benefits.

  EMR/EHR competitors that cannot enable high-use, intuitive care-giver documentation capabilities, for physician, nurses and allied professionals, will fail in the marketplace.

- ***Longitudinal data and record review.*** EMR/EHRs cannot be repositories alone, and the future will see increased study of historical data. Studies will become less academic and increasingly pragmatic for system and care optimization. Records will be reviewed collectively and individually to assess and optimize practice patterns, outcomes, utilization rates, financial performance, and even the use and improvement of technology itself. And audiences accessing the data will expand far beyond the few within Finance, Quality Departments or other pockets – practitioners will readily use data to evaluate their own practice patterns and outcomes, and improve, as well as managers, department heads and others who, by access to data, can redesign the services they provide.

  EMR/EHR competitors that cannot deliver on longitudinal data accessibility across the spectrum of the business will fail in the marketplace.

- ***Near-real-time data review.*** Longitudinal data is a challenge, to be sure. But the greater challenge is to enable access to data with a near-real time capability. Such access will allow practitioners, and those who monitor utilization or financial coding, to FIX problems as they occur and ensure best care and complete and correct documentation at every turn. Merely studying problems after the patients have been discharged will not suffice, because problems must be remedied and optimal care provided while each patient is still within the "system" of care.

  EMR/EHR competitors that cannot provide near-real time data transparency while patients are still within the "system," and challenges remedied or improvements achieved, will fail in the marketplace.

- ***Integrated systems.*** Many healthcare organizations and providers will continue to rely on IT solutions that require fragmented vendors or best-of-breed approaches. Other healthcare organizations and providers will align with single vendors for all or most of their applications, while those vendors represent a suite of solutions and applications for providing the full range of IT needs and capabilities. The future of IT in healthcare will require full integration of solutions.

  EMR/EHR competitors that cannot deliver fully integrated solutions, OR that cannot readily achieve integration with solutions already in place, will fail in the marketplace.

- ***Optimized quality measures performance.*** The pressure toward performance transparency and comparative reporting will increase into the future, not decrease. The number and scrutinous nature of metrics will continue to expand. IT will remain the only means by which quality data can be captured and thereafter reported in the volume that will be required. IT is also the only means by which performance will actually be monitored in near-real time and thus enable improved outcomes for patients, better safety for clinicians, and maximized financial performance for measurement-dependent reimbursements or penalties.

EMR/EHR competitors that cannot prove track records of improved performance on required quality metrics will fail in the marketplace.

EMR/EHR competitors that cannot provide near-real time improvement capabilities by point-of-care data transparency will fail to produce the performance levels needed for their client organizations and providers and thus fail in the marketplace.

- ***Health focused*.** The future will require that IT reflect the full scope of characteristics listed above, the sum of which will enable health as a focus, rather than merely health care. The focus on health will reflect understanding each patient's needs and personal context, and designing interactions, care, education and life-style needs to meet health requirements and optimize well-being. Continuity of care requires IT throughout the community, and rules and standards for optimal care during episodes, across milestones and life events, and across the years of one's life.

  EMR/EHR competitors unable to support health as a focus - beyond "episodes" and "encounters" and whether inpatient or ambulatory - will fail in the marketplace.

- ***Advanced clinical decision support – beyond alerts*.** One of the two pinnacles of achievement in healthcare IT will become proven advanced clinical decision support (CDS). No professional can "see" process or make appropriate and safe decisions from the mass of data and information from the infinite sources in real time as is needed to optimize care and financial success. CDS ensures that all relevant data are included in computations and decisions support, and that clinicians are aware of dangers, standards or care, and options to consider that enable all to provide for patients in the most expert, timely, cost-effectively and financially advantageous manner.CDS also will address the longer term needs of patient and people, not only those associated with an episode or encounter, but for patients/people who have key milestones occur, or for whom any element of data should fire a "heads up" for clinically-pertinent care, screening or follow-up.

  Additionally, few CDS algorithms for ideal care are blindly transferable from one setting to another, so the future will enable optimization of algorithms to match local populations, pressures, regulations and needs. Finally, CDS will become transparently connected to ***order sets***, such that responses to CDS-fired alerts will require minimal and streamlined input thereafter, and order sets will be ***both*** (1) fired by CDS ***and*** (2) fire CDS algorithms as selections are made within order sets and care decisions documented.

  EMR/EHR competitors that cannot execute a full, proven CDS-related capability for inpatients, outpatients and the population at large will fail in the marketplace.

- ***Community-wide scalability*.** IT solutions will evolve to enable boundary-less capabilities for recognizing patients/people, guiding their care, and tracking their needs. Facility-centric capabilities will cease to suffice into the future. Healthcare organizations and providers expand their mission to provide care and track the health for populations of patients and people, not merely those with whom they experience "encounters" or "episodes." And the "community" will encompass the variety of missions as well, as organizations and providers will need to interact and communicate, and exchange information and decision-maximizing data for a population of patients and people across a spectrum of locations and types.

  EMR/EHR competitors that cannot provide connectivity across vast and disparate locations, geographically and by mission and type, will fail in the marketplace.

- ***Patient home capabilities*.** All the above will make possible a true "patient home" capability. Merely creating a computer-based capability to accumulate information at the patient/person level and track thereafter will NOT be considered mature or sufficient. The future will require

the capability of incorporating meaningful clinical (and financial) information from all sources throughout the healthcare “community” into a single “place, virtual in nature Once that is accomplished, than the most appropriate organization and providers or point of interaction – physical or electronic – for each patient will be designated as the “patient home” for ongoing interaction and follow-through.

IT is mission-critical to the concept and execution of the “patient home.” The community-wide EMR/EHR is that foundation upon which the “patient home” will be built. Without the EMR/EHR in place, with all of the characteristics discussed above, the “patient home” will merely represent another disparate, disjointed and problematic care location and data point from which continuity cannot be achieved.

EMR/EHR competitors that cannot enable high-use, intuitive care-giver documentation capabilities, for physician, nurses and allied professionals, will fail in the marketplace.